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BRITISH NORTH BORNEO

Fisheries :- Following the decision taken in 1952 that the Colony could not support a separate Fisheries Department, it was closed early in 1953.

Fish forms a staple food for many of the Colony's inhabitants, and the 1951 Census revealed that fishing is the principal occupation of 4,991 persons. During the year 6,428 fishing boats were licensed and licences were issued for 3,780 fishing traps, nets and lines. A new departure is the increasing popularity of outboard engines. In Jesselton, for example, 48 out of 185 boats now use this form of propulsion. There is no deep-sea fishing in the accepted sense. The main sources of supply are the relatively shallow coastal waters, and on the East Coast, the estuaries of the greater rivers, particularly the Labuk and the Kinabatangan. Of special interest on the East Coast are prawns, turtles and seed-pearl oysters. The prawn fisheries in the Labuk estuary are the most highly organised native fishing industry in the Colony. The number of nets is controlled, 354 nets having been licensed for fixed sites in 1953. Turtle fishing is practised under licence in the Darvel Bay area by the Cocos Island settlers. In the Labuk district, seed-pearl oysters are collected in shallow water. The pearls are exported.

The fishing industry is not, on the whole, well organised. As a general rule, it can be said that fishermen are independent where they fish for their own consumption, or for a limited market, but in the larger urban areas where there are big markets, the industry is more often than not controlled and financed by the middlemen, who supply the boats and gear. Only at Tawau on the East Coast are there any adequately capitalised companies operating fleets of junks. Here fishing is carried out in relatively deep water, and the catches are salted or frozen and exported. At Tawau also exists the only plant producing ice for the industry.

The culture of fresh-water fish was greatly expanded during the year under a Colonial Development & Welfare Scheme, which is being administered by the Agricultural Department. Prior to 1948 there were only 4 freshwater fish ponds in the Colony and these were confined to the raising of carp. Between 1948 and 1952, 11 new ponds were established and 3 additional species *Tilapia mossambica*, *Trichogaster pectoralis* and *Osphronemus goramy* were introduced. Of these *Tilapia mossambica*, which is both hardy and prolific, has proved especially satisfactory. A further 62 ponds were constructed in 1953, of which the great majority were in the interior where they are most needed, and 3,074

Tilapia, 155 *Sepat Siam* and 60 *goramy* were distributed during the year to fish pond owners. The transport of fry to distant areas has been greatly facilitated by the internal airways service, which permits rapid transit with a minimum of loss.

F.A.O.

New Director General of F.A.O. :- Dr. P. V. Cardon of the United States of America has been appointed Director General of the Food and Agriculture Organization of the United Nations by the FAO Conference. Dr. Cardon is the third Director General of the Organization's history and succeeds Mr. N.E. Dodd. Dr. Cardon has been closely connected with FAO since the Hot Springs Conference of 1943, which he attended as a member of the U.S. Delegation.

FAO Fisheries Division :- At the invitation of the Government Dr. D.B. Finn, Director, Fisheries Division, and Mr. M. Girard, Secretary of the General Fisheries Council for the Mediterranean, visited Egypt in the first half of February. Special attention was given to the management of coastal lakes and to the development of sea fishing particularly in the Red Sea. On the way back Dr. Finn stopped off in Turkey. Dr. E. Hess, chief of the Technology Branch, attended the 5th IPFC Meeting in Bangkok, Jan./Feb. and on the return trip visited Malaya, Singapore, Ceylon, India and Pakistan to consult with ETAP experts there.

HAWAII

Pacific Oceanic Fisheries Investigations :- During 1953 research has been continued on 3 major projects. The study of the distribution and abundance of tuna in the equatorial Pacific was continued and included assistance to two commercial fishing ventures for equatorial tuna. The study of the skipjack fishery around the Hawaiian Islands was reorganized and both hydrographic and biological work in island waters were intensified. The artificial bait studies were continued and expanded to include sea trials of chemicals which had successfully attracted fish in the Coconut Islands ponds of the University of Hawaii Marine Laboratory.

One major hydrographic cruise and 5 experimental fishing and biological cruises were made to the Equatorial region. Two comprehensive hydrographic cruises were executed around the Hawaiian Islands as well as 12 weekly hydrographic sections of 2 days each for recording short term changes in hydrographic conditions in the vicinity of the Hawaiian Islands. Four scouting cruises were recently completed around the Hawaiian Islands to observe the seasonal changes in distribution of skipjack schools.

"John R. Manning" :- According to a recent press release of the Pacific Oceanic Fishery Investigations, Honolulu, the research vessel "John R. Manning" arrived back in Honolulu after 3 weeks of exploratory fishing north of Hawaii. The Director of the Laboratory reported that, although hampered during the last 9 days of the trip by mountainous seas and high winds, the ship made an important discovery of albacore tuna which may foretell a new industry of the future for Hawaii.

The large fish, ranging in size from 50 to 75 lbs., were taken in subsurface waters by the longline method of fishing. This fishing, as carried out on the "Manning" employs about 13 miles of line with baited hooks about every 100 feet. Hung from flagged buoys this line sinks to depths of about 300 feet below the surface, where it drifts from setting time in the early morning to hauling time in the afternoon.

The vessel, fishing only experimental amounts of gear, caught over one ton of albacore in one day just before heavy weather set in preventing further fishing. To add to the interest of the cruise and subsequent scientific knowledge of the habits of this deep sea tuna, scientists aboard the "Manning" tagged 24 of the albacore with a surgical tubing tag passed through the back. After tagging, the fish were released, still alive, into the cold waters of the North Pacific. Results of this and similar experiments, the scientists explain, will indicate how far in the broad Pacific these tuna range, whether or not these midocean tuna travel to the Asian or to the American continent or possibly to the southern hemisphere during their life span.

HONG KONG

Fishing Industry :- Hong Kong's fishing industry was a recent subject of discussion over Radio Hong Kong. Previously most of the fish taken were dried and salted and the majority of them went to China. Since the China market closed, emphasis has been placed on fresh fish and the fishing organization had 43 ships to meet the fishing fleet to bring in the catches quickly.

The Education Department has continued to exert every effort to help the fisher-folk schools having been established, wherever new communities of fishing people have sprung up.

There are now 135 mechanized ships, and experiments have proved to the fishermen that mechanized boats practically double the catch. Hong Kong exported 16,000,000 fry for fish culturists in 1952.

"Alister C. Hardy" :- A 66-foot steel hull research vessel with adjustable propeller, cold storage and live tanks was recently constructed in Hong Kong, and launched on November 27, 1953, by Lady Grantham, wife of his Excellency the Governor in the presence of Professor A.C. Hardy of Oxford University, the Vice Chancellor of the Hong Kong University and Dr. Cecil Miles, Secretary of the Indo-Pacific Fisheries Council. The vessel is operated by the newly-created Fisheries Research Unit of the Department of Biology of the Hong Kong University.

Fish Marketing Training Course :- Following up the suggestion of the IPFC at its 4th Meeting, an Agreement has been signed between the FAO and the U.K. Government whereby a jointly-sponsored training course on fish marketing will be held, commencing as from July 12 for a period of six weeks. Governments have been invited to nominate prospective trainees from among their senior fisheries and marketing staff.

Director, Department of Agriculture, Fisheries and Forestry :- Mr. D.C. Blackie has been appointed to this post, replacing Mr. T.G. Strangeways, who has retired.

INDIA

Development and Planning of Fisheries :- During the year 1952, efforts to increase production of both marine and freshwater fishes were continued. The Government of India granted financial assistance amounting to about Rs. 3,223,000 to various State Governments for implementing 40 "Grow more Food" schemes for fisheries development. These schemes were directed towards increasing the production of fish and increasing supplies of fish to consumers. The schemes were mostly continued from the previous year and the expected additional production is estimated at 93,000 tons.

Schemes for the development of inland and marine fisheries was continued. The number of fishermen's co-operative societies also increased and these organizations were particularly active in the States of Saurashtra, Bombay, Travancore-Cochin, Madras, Orissa and West Bengal. Steps were taken to improve the quality of processed fish by providing salt at concessional rates in the fish-curing yards and also by structural improvement of the yards.

Central Inland Fisheries Research Station :- Formerly located at Barrackpore has been temporarily removed to Old Mint Buildings, 47/1 Strand Road, Calcutta, 7, and will remain there till further notice.

INDONESIA

Fish Production, North Coast of Java :- Official figures show that during the third quarter of 1953, the production of fishing in the north coast of Java was 5,269,471.6 kilograms worth Rp. 12,493,899.55. The yield was for the greater part acquired in Tegal,

Pemalang, Semarang and Brebes (Central Java).

This was 102,395.6 kilograms worth Rp. 1,930,805.35 in excess of last year's yield (during the same quarter) namely 5,167,076 kilograms worth Rp. 10,563,094.20.

Indonesia and Portuguese Timor :- According to a paper by Toyotaka Tanoue appearing in the Memoirs of the Faculty of Fisheries, Kagoshima University, Vol. 3, No. 3 (Nov., 1953), the University's Training Ship "Kagoshima Maru" was engaged in experimental long-line fishing at seven stations off the islands of Mangole and Timor in July. 1952. The fishing rate per 100 hooks of tunas (principally yellow fin) was 3.8 off Mangole and 5.8 off Timor, at a depth of from 80 to 120 metres and water temperatures between 20 and 25°C. The most effective bait was *Cololabis saira*. Zooplankton was more abundant than phytoplankton at the stations off Mongole and in the Banda Sea, while the reverse was true of those off Timor. In both cases, the zooplankton consisted principally of copepods and the phytoplankton of *Rhizosolenia* species. Technological experiments revealed that the amount af ammonia in yellowfin meat was higher than in other species and that they must under tropical conditions be stored in ice within 5 hours of being caught. In order to protect the colour and consistency, the optimum regulated temperature in the hatch was found to be 0° to -2°C.

I.P.F.C.

Fifth IFPC Meeting :- The Council held its 5th Meeting in Bangkok between January 22 and February 5, representatives of thirteen Member Governments and 3 international organizations being present. Mr. Boon Indrambarya, Director General of the Thai Fisheries Department, was elected Chairman for the ensuing period and Mr. J.A. Tubb of the U.K. Vice-Chairman. Monsieur R. Serene as retiring chairman remains a member of the Executive Committee.

In the field of inland fisheries, the Council recommended that its Member Governments study the possible effect on the fisheries of river-development schemes and industrial pollution of natural waters, that work be continued on the optimum combinations of fish species under culture conditions, and on the biology and breeding of *Chanos*. A request from the Government of India for an opinion on the desirability of introducing Tilapia into Indian freshwaters was studied and it was recommended that further efforts be made towards the formation of a small international research unit for *Hilsa* investigation.

As regards sea fisheries, it was recommended that efforts be continued to obtain morphometric and ecological data on Tuna and that co-operative research be undertaken on Rastrelliger. A submission by the Government of the Philippines regarding fishing with bright lights was considered and the Council found no basis at present for discouraging this method more than another. Technical Committee I was asked to assemble information on methods for age determination of fishes in tropical areas.

The Miscellaneous Fisheries Panel recommended that Governments continue to collect temperature and salinity data and that these be published. A successful symposium was held, under the joint auspices of UNESCO and the Council, on plankton and useful conclusions were reached. The prawn fisheries were chosen as the subject of the 6th Meeting Symposium, with emphasis on the extension of fishing operations into deeper waters.

The panel for the study of craft and gear laid down its programme for the period 1954/55 in the development of local craft for small boat fisheries in the region, and especially the development of local vessels for beach landing; the use of indigenous materials for nets and gear, the appraisal under fishing conditions of gear preservatives, and the study of the relative merits of inboard and outboard motors.

The panel for food technology was assigned the task of studying improved methods

of producing and storing dried fish, especially under conditions of high humidity.

Member Governments were urged to make provisional nominations to the forthcoming FAO Fish Marketing Course to be held at Hong Kong in accordance with the Council's recommendation at its 4th Meeting. A proposal of the Government of India was adopted to urge the establishment of training courses for master fishermen in mechanised fishing methods.

Norms were laid down regarding the types of technical papers the presentation of which should be encouraged for the 6th Meeting. These should be critical rather than merely descriptive and should define methods of approach to the problems of the region associated with fish production.

The Council was concerned over the apparent trend towards a changing world climate and the effects which this was stated to have had on various fisheries in the northern hemisphere. Member Governments were urged to assign scientists to investigate to what extent modifications in world climate might affect the fisheries of Asia and the Far East.

2nd 1954/55 Executive Committee Meeting:- This is scheduled to take place in Indonesia in June and will be attended by the Chairman, Mr. Boon Indrambarya (Thailand); Vice-Chairman, Mr. J.A. Tubb (United Kingdom-Hong Kong); Retired Chairman, Monsieur R. Serene (France) and the Secretary, Dr. Cecil Miles.

IPFC Secretariat:- Dr. Cecil Miles, Secretary of the Indo-Pacific Fisheries Council proceeded to Rome for consultations in the latter part of March stopping at New Delhi, Lahore and Karachi en route. He will, on the return trip, visit government officials and fishery officers at Bombay, Madras, Colombo and Singapore. Dr. T.J. Job, Assistant Regional Fisheries Officer, proceeded on home leave to India in mid March and will return in June.

I.C.Z.N.

International Trust for Zoological Nomenclature :- The Fourteenth International Congress of Zoology, held in Copenhagen in August, 1953, adopted a series of recommendations made by the International Commission of Zoological Nomenclature as a result of a representative international Colloquium. The Colloquium had been organized by the International Trust with the assistance of UNESCO and the International Union for Biological Sciences (IUBS).

The resulting *Copenhagen Decisions on Zoological Nomenclature* which clear up many points which had hitherto given rise to confusion among taxonomists, are published by the International Trust for Zoological Nomenclature and may be obtained from the Trust's offices at 41, Queen's Gate, London, S.W. 7 at the subsidised price 5s. (US$ 0.75).

I.C.E.S.

The International Council for the Exploration of the Sea decided in its last meeting, in October 1953, that a special scientific meeting on culture of oysters and other bivalves should be held during the next Council meeting in Paris, October, 1954.

France is the birth-place of modern oyster culture in Europe. It has developed these to a great extent in many variations and to a high degree of perfection. It is for this reason that during the Council meeting special attention will be paid to oyster culture and related subjects.

In addition to the scientific meeting a tour will be organized by the French Government to some of the most interesting and important centres of oyster and other bivalve cultures along the coasts of France.

It is understood that the presence of scientists from the Region who are interested in bivalve culture, will be welcome and the Secretariat would be glad to use its good offices in obtaining formal invitations.

JAPAN

Planned Reduction in Number of Small Trawlers :- The Japanese Fisheries Agency plans to continue reducing the number of small trawlers. The reduction is part of a programme to reduce the small trawler fleet from the total of 36,644 boats in 1951 to 27,830 boats (67,774 gross tons) within the 5-year period ending April 1, 1956. The programme is aimed at correcting over-fishing and improving the economic condition of fishermen.

The Japanese Fisheries Agency originally planned to reduce this fleet to 20,000 boats, but the plan has been modified to permit the retention of small hand or sail-powered boats dragging for shell-fish. Owners of boats deleted from the trawl fisheries receive compensation in accordance with a fixed standard of evaluation of boats. Crew members also receive a form of unemployment compensation if loss of work results from this reduction. Boats subject to removal from the trawl fisheries are either sunk, converted to other types of fishing or other non-fishing operations.

MALAYA

New Laboratory :- A new fisheries laboratory is to be built at Changi to chart the movements of fish in Malayan waters and to find out the best method of catching them.

Dr. F.D. Ommanney, Director of the Colony's Regional Fisheries Research Station, stated that the laboratory would have a team of 5 scientists from the Colonial Scientific Research Service. Research work is to begin in March with the arrival of a 28-foot launch from England for inshore work. Another vessel, the 100 foot-long Manihine, which costs $ 200,000 and will be used for deep sea research is being converted in England and should arrive in Singapore by July. This vessel will be equipped with the latest scientific devices including an echo-sounder and radio apparatus.

The whole project is a five-year Colonial Development and Welfare Scheme. All capital costs and half the annual expenditure will be borne by British funds. The other half will be shared by the 5 territories : Singapore, the Federation of Malaya, Sarawak, North Borneo and Brunei. The Singapore Government in its 1954 revised estimates set aside $ 105,000 for its share of the project.

Control of Fish Ponds :- Legislation to enable Singapore's Director of Fisheries to control fish culture for food production and malarial prevention will be introduced at a meeting of the Colony Legislative Council.

The uncontrolled cultivation of fish in ponds states the Attorney General, in explaining an amending bill to the Fisheries Ordinance, tends to encourage the breeding of malarial mosquitoes, and a measure of control "will facilitate the work of health authorities".

Opportunity is also being taken to empower the Governor to make rules regulating or prohibiting the import of non-indigenous fish and providing for the protection of cockles.

PAKISTAN

U.S.A. Technical Assistance for Fishery Facilities Development :- The United States of America through the Foreign Operations Administration of the Department of State will provide assistance in the amount of US $ 750,000 for the development of modern fishery facilities in Karachi. This project was one of a number included in a supplementary programme agreement for fiscal year 1953, for technical cooperation. The Government of Pakistan will bear all rupee costs of joint projects which will at least equal the United

States costs.

There has been a tremendous increase in the population of Karachi, from about 400,000 to the present 1,500,000. This has posed an urgent problem of increased food production. The construction of modern facilities for handling fish, motorizing the fishing fleet, and other improvements in the service should result in important increases in the volume of fish and insure safe supplies of this important food item.

PHILIPPINES

Iloilo Fish-Pond :- Arrangements have been completed for the handing over by the City of Iloilo of a piece of land to the Bureau of Fisheries for the purpose of converting it into a fish-pond, which will be administered and operated by the Bureau and will be used for instructional purposes in the Vocational Fisheries Course of the Iloilo City High School.

Scholarship Holder Returns :- Mr. V. Uyenco, chemist and food technologist, returned recently from Australia after completing a 6-months scholarship on food technology. granted by the Australian Government under the Colombo Plan. Whilst in Australia the C.S.I.R.O., Food Division took care of his activities which included observation of the food research of the Division in its several laboratories, actual food plant inspection and observation in the different food factories in New South Wales, Victoria, Queensland and Tasmania.

Indonesian Fisheries Students :- Messrs. Rustami Djadjadiredja and Isnadi Isnanda, two fishery officers from the Republic of Indonesia, returned recently to Djakarta after a stay of 4-months in Manila conducting intensive observational study of the different phases of activities of the Bureau of Fisheries, particularly freshwater and brackishwater fish culture.

Director's Inspection Trip :- Dr. D.V. Villadolid, Director of Fisheries, recently returned from a 22-day inspection trip of stations and district fishery offices in the Visayan Islands and Mindanao. He made arrangements to convert the fishpond experimental station at Lala, Lanao Province, into a tilapia propagation station for Northern Mindanao.

Henderson Trippe (Philippines) Inc.:- An attempt is being made by Handerson Trippe (Philippines) Inc. of Manila to bolster the fishing industry of the Philippines. A request has been made through the Bureau of Fisheries to the Government to import a team of 4 Japanese fish experts to introduce and operate the "boke ami" method of fishing, utilizing the local "basnig" (bag net). Arrangements are now under way to bring out the experts together with gear and equipment.

Professor Sato, a former faculty member of the Imperial Japanese Institute, and at present negotiating on behalf of the Henderson Trippe Inc. has, in addition, been conducting a series of well-attended lectures to fish capture students. He has been instructed by the Fisheries Department of Japan to impart such scientific knowledge in fishing and fishing methods to the Philippino students.

Inland Fisheries-Davao Province :- Great possibilities for inland fisheries exist in Davao Province and in a recent survey conducted by the District Fishery Officer, it was noted that the cost of fish has been greatly reduced and is expected to fall still further. This is attributed to the recent increase in area of fishponds. At present, there are about 2,000 hectares of fishponds devoted to the cultivation of Chanos, and applications for permits to exploit further areas of mangrove swamps are still pending. The great demand for mangrove swamps is partly due to the financial aid being extended by the Government, and to the zeal and industry of those who pioneered in fishpond ventures in this region.

Fishing Boat Licenses :- The President of the Philippines has proposed that the licenses of fishing boat owners be revoked unless they carry out their assigned duty of providing fish supply in Philippine markets.

The President took this step after receiving information that fishing boat owners and operators who used to engage in dynamite fishing have "grounded" their boats in protest against enforcement by the Administration of legislation against fishing with dynamite and in order to deplete the fish supply in the markets and thereby force an increase in fish prices.

TAIWAN

Fisheries :- Fishing is an important industry of Taiwan, and in certain aspects is closely associated with agriculture. The Joint Commission on Rural Reconstruction has supported a modest programme of assistance to the fishing industry. Such assistance has been directed primarily at in-shore fishing, fish farming, training, fishing boat harbours and related installations. Through these financial and technical assistance projects, 160 aborigine fishermen have received training in improved fishing practices; 6 anchorages have been repaired or constructed; 2 ice plants rebuilt; 2 slipways for vessel repairs provided, 18 million fish fry made available to pond fishermen-farmers; 20 signal lights installed and 2 net-treatment plants and 2 battery-charging stations constructed besides other important accomplishments. With the establishment of a fisheries section in the MSA China Mission, a single unified fisheries programme has been developed within the framework of which the JCRR concentrates its attention and assistance on in-shore fishing and fish farming, while MSA emphasizes deep-sea fisheries. Working in closest cooperation with government agencies and a fisheries production committee, substantial and continuing increases in the total fish landing are being realized.

THAILAND

Gulf of Thailand :- Preliminary results of commercial bull-trawling in off-shore waters of the Gulf of Thailand indicate that the offshore waters of the outer Gulf harbour a rich and varied stock of commercially valuable species.

The new fishing company, organized as a Thai limited company employs two semi-diesel powered, wooden Japanese-type hull trawlers which formerly worked out of Singapore. Key fishing personnel are Chinese from Hong Kong whilst Thai crews are being trained to take over at some future date. The operation is a two-boat trawl fishery with each vessel setting alternately. Gear is of standard Japanese-Singapore type.

Tilapia Demonstration Pond, Bangkhen Fisheries Station :- Promising figures have been obtained in the production of Tilapia at the Demonstration Pond at the Thai Government Bangkhen Fisheries Station, which is assisted by Dr. S.W. Ling, FAO/ETAP Fish Culturist.

The pond has a water surface area of 2,000 sq.m. with an average depth of $1\frac{1}{2}$ m. The preparation of the pond took place on January 27, 1953; stocking followed on February 5, 1953, with 200 pairs of young matured Tilapia and final harvesting was carried out on February 23, 1954, the total period of the culturing operation being about 13 months.

The total amount of fish harvested from this pond was 3,727 kg. and after deducting the weight of fish stocked (about 27 kg.) the net production was 3,700 kg. for a period of about 13 months or about 3.4 tons per year. This represents a production of 6.8 tons of fish per acre per annum or 17 tons per hectare per annum. The operation will

be repeated in order to see whether these high figures may legitimately be considered as the normal production of this pond.

Minister Visits Japanese Training Vessel :- Recently, Field Marshal Pin Chunhawan, Agriculture Minister, accompanied by the Deputy Agriculture Minister, the Agriculture Under-Secretary, the Harbour Department Director-General and the Director of the Fish Market Organization inspected a fishery training ship "Cocashima Maru" of Kagoshima University, on a short visit to Thailand, after visiting India.

The vessel has a displacement of 628 tons and cold storage for 300 tons of fish. Her speed is 10 miles per hour.

Rector Yamamoto in charge of the ship told Field Marshal Pin that the purpose of the trip is to survey possibilities of tuna fishing. At present annual catches of tuna fish made by Japanese fishermen for supply to canning plants in America are estimated at about Baht 200 million.

UNITED KINGDOM

British Association for the Advancement of Science :- Evidence of a changing world climate was studied at the Association's 115th Annual Meeting, when Dr. L.H.N. Cooper pointed out that most of the water now in the bottom of the North Atlantic must have sunk from the surface during the severe arctic winters of 1918, 1919 and 1921, thus displacing upwards the nutrient-rich water which rejuvenated the fisheries of the English Channel in 1921 ; it appeared, however, that there were no longer any substantial nutrient reserves within the reach of forces which could bring them to the surface.

It will be recalled that the I.P.F.C. at its 5th Meeting in Bangkok, concerned over an apparent trend towards a changing world climate, recommended that its Member Governments give serious attention to this, since it may also explain the recent failures of certain tropical fisheries in Asia and the Far East and that investigations be carried out as to where the fish may be migrating.

UNITED NATIONS

A systematic collection was prepared in 1951 by the Legal Department of the United Nations, of national legislative texts dealing with matters of international concern in relation to the continental shelf, contiguous zones, supervision of vessels on the high seas and jurisdiction of states over acts committed on the high seas. ("Laws and Regulations on the Regime of the High Seas" United Nations, 1951)

A draft report by the United Nations International Law Commission has now studied the question of sovereign rights over the continental shelf and the exploitation and conservation of its natural resources.

PUBLICATIONS

Deep-Sea Research :- An International Research journal edited by L. Fage, Paris, C.D. Ovey, Cambridge, and Mary Sears, Woods Hole, Massachusetts, and sponsored by the Joint Commission on Oceanography of the International Council of Scientific Unions. Obtainable from Lange Maxwell and Springer Ltd. Maxwell House, 242 Marylebone Road, London, N.W. 1 at £ 4. 10s. per volume including postage.

Proceedings First International Seaweed Symposium, 1952 :- Obtainable from the Institute of Seaweed Research, Inveresk, Midlothian, Scotland, 10/6d per copy, post free.

FAO Fisheries Bulletin, Vol. VII, No. 2:- Attention is called to the following articles which will appear in the FAO Fisheries Bulletin, Vol. VII, No. 2:-

Survey of the United States Industry Untapped Fishery resources in Chile

The preservation of wet Fish (Part I). First report of the Interim Committee on fish handling and processing.

The Culture of Tilapia in Rice Paddies in Taiwan, by T.P. Chen. Chinese-American Joint Commission on Rural Reconstruction, Fisheries Series: (2) 1953:- The history of the introduction of *Tilapia mossambica* into Indonesia, Malaya, Philippines, Thailand and Taiwan and to the West Indies is briefly narrated and the breeding habits of the fish are described. Recounting the general experience of fish culture in rice fields on the mainland of China and Japan, the author concludes that the culture of Tilapia in rice fields should be preceded by experimentation, planning and demonstration with reference to the local conditions.

Studies on *Tilapia Mossambica* Peters in Indonesia, by K.F. Vaas and A.E. Hofstede. Contributions of the Inland Fisheries Research Stations, Djakarta-Bogor, No. 1.

Theory of Growth and Competition in Natural Populations, by A. Riley, Journal of the Fisheries Research Board of Canada, 10 (5), 1953,:- Classical theories of population growth and inter-species relations are briefly reviewed. It is shown how variations in feeding habits, reproductive patterns, and other aspects of population behaviour have required modifications of the basic theory in order to make it applicable to particular species.

Methods of Plankton Collection and a Description of a new Sampler, by R.R. Langford, Journal of the Fisheries Research Board of Canada, 10 (5), 1953:- A discussion of the composition and distribution of plankton organisms forms a basis for the presentation of a critical review of methods of plankton collection. The quantitative sampling of plankton by pumps, water samplers, tow nets, plankton traps and the Clarke-Bumpus sampler is discussed. A new instrument, the Toronto Sampler, developed at the Ontario Fisheries Research Labaratory, is described and its performance is assessed.

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